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Citation: Pease, Peter and Cunningham, James (2016) Preparing Nascent And Early Stage Entrepreneurs For Their Entrepreneurial Journey: What Psychological Resources Do They Need And How Can They Be Acquired? In: ISBE 2016, 28 October 2016, Paris, France.

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# **Preparing Nascent And Early Stage Entrepreneurs For Their Entrepreneurial Journey: What Psychological Resources Do They Need And How Can They Be Acquired?**

**The training, education and preparation of entrepreneurs.** How can the entrepreneurs of the future be better trained and prepared? Working Paper

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**Key Words:** entrepreneurship psychology, resources, entrepreneurship education, psychological capital

## **ABSTRACT**

### **Introduction**

Based on the growing focus on how best to train, educate and prepare all types of entrepreneurs (Fayolle, 2013, Nabi et al., 2016, Thrane et al., 2016) this development paper seeks to extend the psychological dimensions of entrepreneurship through the development of a model of entrepreneurial psychological capital (EPC). EPC attempts to identify those psychological resources which are open to development, and which help potential, nascent and early stage entrepreneurs achieve positive outcomes. Limited attempts have been made to apply the organisation-employee model of psychological capital to entrepreneurship (Hmieleski and Carr, 2008b, Baron et al., 2013) but to date no one has developed a model of entrepreneurial psychological capital built up from the entrepreneurship psychology literature.

### **Entrepreneurship Psychology Models: Source of Construct**

The entrepreneurship psychology literature is reviewed using the framework developed by Ács and Audretsch (2006) and updated by Omorede et al. (2015) which divides the literature into the subareas of personality, cognition, emotion, attitude and self. Each section is analysed through the lens of the search for potential psychological resource constructs, which could be open to development, and could therefore be included in our model.

### **Entrepreneurial Psychological Capital: What is it?**

Our working definition of entrepreneurial psychological capital is, “the psychological resources which entrepreneurs need to pursue and sustain their entrepreneurial ambition”. The organisation-employee model of psychological capital (Luthans et al., 2007) is explained and the existing studies which have applied this model to entrepreneurship are reviewed.

### **Research Approach and Methodology**

The constructs to be included in this initial and ongoing study are discussed and the proposed methodology for developing and validating a tool to define and measure entrepreneurial psychological capital is set out. Initial results of the iterative and ongoing and face and content validity results are discussed.

### **Contribution**

This study will make two contributions: firstly, the theoretical development of entrepreneurial psychological capital from the entrepreneurship literature, which will provide a resource based perspective for entrepreneurship psychology, and secondly the development of a tool which can be used to validate and operationalise the construct.

## INTRODUCTION

One of the challenges for entrepreneurship educators, policy makers and mentors is to ensure that nascent and early stage entrepreneurs have the appropriate resources and support to start a new venture. To date some of the support provision can be homogeneous in nature and in delivery. Some delivery of entrepreneurship education still centres on the business plan, while other offerings have embraced business model perspectives and failing fast (Gately and Cunningham, 2014). Being part of an entrepreneurship eco-system and being availed of structured support for different actors can be beneficial to nascent entrepreneurs in building their social capital and networks (Francesco Schiavone et al., 2014). While these supports and interventions have many beneficial impacts for nascent and early stage entrepreneurs the question remains as to whether or not are they sufficient in preparing and supporting these entrepreneurs.

We posit that understanding and measuring the entrepreneurial psychological capital (EPC) of nascent entrepreneurs will add another dimension of knowledge for both entrepreneurs and those supporting them, to ensure they optimise and utilise the appropriate resources and support to start a new venture. Moreover, our conceptualisation of EPC attempts to identify those psychological resources which are open to development, and which help potential, nascent and early stage entrepreneurs to achieve positive outcomes. EPC has been posited in a limited way within the entrepreneurship literature (Hmieleski and Carr, 2008b, Baron et al., 2013) as an application of the organisation-employee psychological capital model developed by (Luthans et al., 2007) and linked theoretically to, the theories of financial, human and social capital within the entrepreneurship literature.

Much of the extant literature has focused on the personal characteristics (Frese and Gielnik, 2014, Zhao et al., 2010), cognition (Baron, 1998), affect (Baron, 2008) and attitudes (Engle et al., 2010) of entrepreneurs (Omoredede et al., 2015, Ács and Audretsch, 2006). This has been a fruitful strand of empirical focus because these fields of study have helped to define entrepreneurship and have formed one of the cornerstones of early entrepreneurship research.

This development paper seeks to build on the relatively unexplored area of EPC and develop a model of entrepreneurial psychological resources, which are open to development and can be positively related to entrepreneurial outcomes. Consequently, the contribution of exploring this is twofold. First, is advancing our understanding beyond the extant study of entrepreneurship psychology, to identifying the EPC and psychological resources required at the nascent and early stages of entrepreneurship, an avenue of research that has not been explored before within the entrepreneurship literature.

Second, through the identification of EPC and psychological resources it can provide a set of issues that can contribute to and improve existing entrepreneurship education initiatives and design interventions that enhance the psychological resource awareness of entrepreneurs that can lead to positive outcomes.

Set in the entrepreneurship psychology literature, this paper reviews relevant issues which arise from this conceptualisation of entrepreneurial psychological capital. The development paper begins with a discussion on entrepreneurship education, then focuses on entrepreneurship psychological models (attitude etc.) before concluding with EPC as the psychological resources that may be required in nascent and early stage entrepreneurship. Our paper finally concludes by discussing the implications of how enterprise educators can attempt to develop psychological resources, both implicitly and explicitly.

## ENTREPRENEURSHIP EDUCATION – The Practice Context

Most jobs in developed economies are created by young businesses (Haltiwanger et al., 2013) so it is important that business startups are encouraged and fostered. Consequently, there is a growing focus on how best to train, educate and prepare all types of entrepreneurs (Fayolle, 2013, Nabi et al., 2016, Thrane et al., 2016) and although policy makers and universities invest heavily in entrepreneurship education, there is no coherent collation of research findings which allow those who design entrepreneurship education to answer such general questions as whether or not it would better for entrepreneurship education to be delivered by academics or entrepreneurs, how long courses should be, whether or not the learning should be case study based, lecture based or experiential (Fayolle, 2013) or which courses might work best for different types of student or institution (Rideout and Gray, 2013). There is little evidence that entrepreneurship education works in terms of increasing

the rate of startups or the success of new ventures (Rideout and Gray, 2013) and overall, startup failure rates remain stubbornly high in spite of the burgeoning of entrepreneurship research and education (Marmer et al., 2011).

In terms of education interventions, the psychological development of nascent entrepreneurs has not been the focus of much empirical investigation. For example, practice based publications, such as, The Quality Assurance Agency for Higher Education (2012)'s Enterprise and Entrepreneurship Education: Guidance for UK Higher Education Providers suggest what an entrepreneurial mindset should be, but other than suggesting that students should be involved in entrepreneurial activity does not give details about how this mindset should be developed or measured.

As we will see, the literature regarding the “what” of entrepreneurial mindset lacks coherence and is largely based on cross sectional, and a few before and after longitudinal studies, with the distal and unreliable measure of entrepreneurial intent being used to measure impact (Joensuu-Salo et al., 2015). Additionally, whilst there are some tools which can help to measure some entrepreneurial psychological characteristics, such as General Enterprising Tendency v2 Test GET2 (2016) and Saville Consulting Wave Entrepreneurial Report (2016) as far we are aware there is nothing which measures the ongoing psychological development of entrepreneurs.

An interesting nascent development in creating the evidence base to support entrepreneurship education has been the emergence of the idea of evidence based entrepreneurship (Frese et al., 2012) and we see our research contributing to the evidence creation agenda. Evidence based entrepreneurship is derived from the growing evidence based management movement (Rousseau, 2006, Briner et al., 2009) which in turn grew out of Sackett et al. (1996)'s work in developing evidence based medicine which is now the accepted paradigm for deciding on the allocation of resources in medicine used by the UK's National Institute for Health and Care Excellence. It has been shown that it is possible to make much better clinical decisions by conducting randomised control trials then collating research results using systematic reviews and meta-analyses and this had a major impact on the medical outcomes. Frese et al. (2016) argue that one of the main purposes of research is to inform practice by generating reliable evidence about which interventions work and has demonstrated the efficacy of this approach in entrepreneurship using waiting list derived randomised control groups in various intervention studies measuring actual business success (Frese et al., 2016, Gielnik et al., 2015).

Evidence based practice suggests the need for the collation of results through systematic reviews and meta-analyses. Whilst there have been several systematic reviews of evidence in entrepreneurship topics such as, personality and planning, systematic reviews of entrepreneurship education appear to be limited in scope and number. In their meta-analysis of entrepreneurship education (EE) outcomes Martin et al. (2013) (K=24, N=16,657) find a significant relationship between academic-focused entrepreneurship education and entrepreneurship-related capital assets ( $r=.238$ ) which suggests that it is effective in that respect, but as they point out future research needs to explore which moderators could explain the heterogeneity of correlations. Bae et al. (2014)'s meta-analysis looks at the impact of entrepreneurship education on entrepreneurial intentions. Neither of the studies look at the impact of entrepreneurship education on actual business startup nor provide answers to the questions set out above by Fayolle (2013). Additionally, as discussed, measures of intentions are flawed in that what people intend to do and what they actually do can be very different (Joensuu-Salo et al., 2015).

Against this background it can be said that although some steps have been made to develop an evidence base which can inform entrepreneurship educators there are significant gaps in the research base needed to inform practice, especially with respect to psychological development.

## ENTREPRENEURSHIP PSYCHOLOGY MODELS

Ever since Schumpeter (1947) introduced the notion of “Unternehmergeist” or entrepreneurial spirit, the psychology of entrepreneurs has been one of the main foci of study within the field. More than 1,600 peer reviewed articles on the psychology of entrepreneurship have appeared in journals, such as the *Journal of Business Venturing* (Omoredede et al., 2015) with a further 142 in mainstream psychology journals such as, *Applied Psychology* (Gorgievski and Stephan, 2016). Making sense of this literature is difficult due to its “emergent, elusive and nebulous nature” (Davidsson and Gordon, 2009) and the heterogeneity of definitions and constructs. Different researchers have used different classifications or historical narratives in an attempt to create a coherent description of entrepreneurship psychology (Bridge and O'Neill, 2012, Burns, 2010, Gorgievski and Stephan, 2016, Snyder et al., 2015, Shane, 2003) but for the purposes of this critical review we will use the framework developed by Ács and Audretsch (2006) and updated by Omoredede et al. (2015) which

categorises the field into five subareas of personality, cognition, emotion, attitude and self. As we will see it is difficult to fit the whole of entrepreneurship into a coherent taxonomy. We conclude this section by suggesting the need for an alternative model.

## Personality

Personality can be defined as, the combination of characteristics or qualities that form an individual's distinctive character and differentiate them from others. Within entrepreneurship psychology mainstream personality traits such as big five dimensions have been shown to predict entrepreneurial outcomes (Zhao and Seibert, 2006, Zhao et al., 2010) and other characteristics have been developed and explored within the field. These include ideas such as the need for independence, the need for achievement, locus of control, risk taking propensity and the ability to live with uncertainty (Borland, 1975, De Vries, 1977) as well as many others. Figure 1 which was used for our initial analysis demonstrates the extent of them.

<b>Figure 1 Psychological characteristics of entrepreneurs from entrepreneurship literature</b>		
		<b>Other</b>
<b>Derived from Big 5 Characteristics</b>		Autonomy
Achievement		Benevolence
Achievement facet of conscientiousness		Conformity
Agreeableness		Conservatism
Conscientiousness		Delay of gratification
Emotional stability		Discipline
Extraversion		Dogmatism
Neuroticism		Enthusiasm
Openness to experience		Expedience
		Flexibility
		Forthrightness
		Human capital
		Humility
		Internal locus of control
<b>Possibly Open to Development</b>		Motivation
Creativity		Need for achievement
Endurance		Need for affiliation
Future orientation		Need for autonomy
Goal orientation		Need for dominance
Innovativeness		Norm orientation
Locus of control		Originality
Optimism		Passion for work
Proactive		Practicality
Self-confidence		Protestant work ethic beliefs
Self-efficacy		Rigidity
Self-esteem		Risk-taking propensity
Self-reliance		Scepticism
Shyness		Sobriety
Social capital		Tenacity
Stress tolerance		Tough-mindedness
Tolerance for ambiguity		Trustworthy
Aggressiveness		Type-A behaviour

**Figure 1. Based on Rauch and Frese (2007); Frese and Gielnik (2014) and Frese (2009)**

A limitation of the existing literature is the preponderance of cross sectional studies and the consequent issue of covariance. For instance, with Frese and Gielnik (2014)'s comprehensive meta-analysis of entrepreneurship psychology, if one adds the proportion of "unique" variance accounted for by each construct measured, 71.7% of the variance in entrepreneurial business performance is accounted for by these

supposedly independent variables, which is impossibly high, given all the non-psychological variables which have been found to affect outcomes. Whilst Frese and Gielnik (2014) do suggest that inter-correlations should be explored it would take hundreds of cross sectional studies to do this. It is quite possible that many of the new constructs developed within entrepreneurship psychology literature can be explained previously developed and validated constructs as we will see in the next section with emotional intelligence.

Constructs	Effects on business performance			
	$r_c$	K	N	$R^2$
Self-efficacy	0.25	11	1,331	0.063
Achievement motivation	0.30	31	4,115	0.090
Proactive Personality	0.27	5	678	0.073
Risk Propensity	0.10	13	1,744	0.010
Innovativeness	0.27	7	800	0.073
Stress Tolerance	0.20	11	1,282	0.040
Autonomy	0.16	8	843	0.026
Locus of control	0.13	23	3,959	0.017
Conscientiousness	0.19	24	3,193	0.036
Neuroticism	-0.18	29	4,446	0.032
Openness to experience	0.21	15	2,461	0.044
Agreeableness	not significant			
Extraversion	0.09	9	1,476	0.008
Human Capital	0.21	68	12,163	0.044
Social Capital	0.21	61	13,263	0.044
Strategic Planning	0.15	14	714	0.023
Business Planning	0.10	51	11,046	0.010
Entrepreneurial orientation	0.26	73	17,935	0.068
Innovation	0.13	42	21,270	0.017
			<b>R<sup>2</sup> Total</b>	<b>0.717</b>
$r_c$ reliability corrected and sample-size weighted mean correlation				
K number of studies				
N total number of correlations				
$R^2$ calculated % of dependent variable accounted for by independent variable				

**Table 1. Derived from Frese and Gielnik (2014)**

Whilst the study of fixed traits is interesting in understanding entrepreneurs and in deciding which nascent and early stage entrepreneurs to encourage and support, by their nature they are less likely to be open to development. Big five personality traits such as extraversion and neuroticism do change slowly over time (Scollon and Diener, 2006) but it is unlikely that these could be developed quickly in early stage entrepreneurs. We consider that traits derived from the ideas of confidence (self-efficacy, fear of failure are more likely to be open to development but this will need to be tested empirically.

## Cognition

Cognitive psychology is characterised by process: how people receive and process information, use it to make decisions and act on those decisions. It has been suggested that the failure of personality psychology to explain differences between entrepreneurs and non-entrepreneurs led to the development of cognitive studies in entrepreneurship (Baron, 1998), but given that mainstream psychology moved its focus to cognition during the 1980's and 1990's it would have been surprising if entrepreneurship psychology had not developed this strand, as a way of providing a richer description of entrepreneurial behaviour. Cognitive models have been used to describe entrepreneurial intention (Engle et al., 2010), biases and risk perception (Simon et al., 2000), entrepreneurial heuristics (Sarasvathy, 2009) and the planning fallacy (Baron, 1998). Some of the more methodologically robust work in this field has been developed using panel studies of entrepreneurial dynamics with Cassar and Craig (2009) and Johnson et al. (2008) showing that nascent entrepreneurs exhibit hindsight bias (which must cast doubt on retrospective studies), that they are more likely to have an "innovator" cognitive

style than the general population (Johnson et al., 2008), that nascent entrepreneurs have a higher need for cognitive closure than non-entrepreneurs and the consequent closure this affords (Schenkel et al., 2009) and perhaps adding weight to Simon et al. (2000)'s work on risk perception, that nascent entrepreneurs are actually more risk averse than non-entrepreneurs (Xu and Ruef, 2004). Constructs studied within this subarea include heuristics, schema, perception, counterfactual thinking, control, biases, risk perception schema and self-efficacy.

For the development of early stage entrepreneurs, it may be useful for them to understand some of the cognitive biases which they could be prone to such as the planning fallacy and risk perception biases as well as having an explicit understanding of the key decisions that need to be made in starting a business, such as whether when to start, whether to be part of a team, which markets to choose and whether to seek investment.

## **Emotions**

Emotions are relatively unstable changes in mood which can influence cognition and behaviour (Baron, 2008, Omorede et al., 2015) and have become a focus of entrepreneurship psychology study in recent years. Hayward et al. (2010) argue that confident entrepreneurs are likely to experience positive affect during business creation and are more likely to be resilient when things go wrong; and positive emotions have been shown to affect motivation and effort and it has been shown that there is a relationship between affect and opportunity recognition, the acquisition of financial and human resources, the ability to respond quickly and the ability to deal with stress. (Baron et al., 2013, Baron, 2008, Cardon et al., 2012). Constructs studied within this subarea include pride, excitement, passion, fear, pressure and self-efficacy (Omorede et al., 2015).

The inclusion of emotional intelligence in this sub area illustrates two of the issues with entrepreneurship psychology research. As the idea of emotional intelligence has gained traction researchers have applied the ideas to entrepreneurship suggesting that it influences creativity, entrepreneurial awareness, vision, optimism and likelihood to engage in entrepreneurial activities (Ahmetoglu et al., 2011, Pradhan and Nath, 2012, Zampetakis et al., 2009). This is interesting because emotional intelligence has been shown not to be a new construct but simply a combination of general intelligence and facets of the big five personality domains of extroversion and neuroticism so is fully explained by existing constructs and additionally has little predictive validity. Secondly this also demonstrates a difficulty in deciding which constructs to place in which of the subareas of research because whilst emotional intelligence is placed firmly in the emotion subarea, the constructs it is a renaming of sit with in the personality subarea.

Perhaps the most useful idea from this subarea for nascent and early stage entrepreneurs the idea of meta-cognition, being aware of, and therefore able to manage one's own emotions (Haynie et al., 2010) which is of particular interest in thinking about how we might help entrepreneurs to marshal their psychological resources, although as we will discuss it might be even more useful for entrepreneur's to be aware of the full spectrum of their psychological make up: personality, cognition, affect, motivations.

## **Attitude**

Attitude can be described as the positive or negative evaluation which a person makes of their environment, specifically, people events, activities or ideas. Within entrepreneurship psychology research it is drawn largely from the theories of reasoned action (Ajzen and Fishbein, 1980) and the theory of planned behaviour (Ajzen, 1991). The theory of reasoned action suggests that what an individual does is determined largely by their attitude towards the task, by their motivational factors, whether they find the prospect of a particular course of action positively or negatively motivating and their perception of social and subjective norms. The theory of planned behaviour adds in a third dimension of how much control the person perceives they have over performing the behaviour: whether they think they have the necessary resources. Engle et al. (2010) found that the theory of planned behaviour predicted entrepreneurial intent across twelve countries.

Constructs discussed within the entrepreneurial attitudes literature include attitudes to risk, beliefs, values, subjective norms, social norms and self-efficacy (Omorede et al., 2015). The theoretical underpinnings of this strand of research draws on both the cognitive and personality strands so is perhaps better seen as an integrative subarea rather than one which is theoretically distinct. For nascent and early stage entrepreneurs, these conceptualisations are particularly useful in considering the creation of goals, the planning process and what it takes to move from thinking about starting a business to actually doing it.

## **Self**

The fifth and final subarea of entrepreneurship psychology according to this taxonomy is that of self (Omoredede et al., 2015). This includes such topics as self-identity, role identity and gender identity. Because this subarea's epistemological foundations are primarily social constructivist it falls outside the scope of our positivist study. However, it is possible to see that in the future similarities between the ideas of meta-cognition and self-identity could be developed.

Other, models partially derived from entrepreneurship psychology suggest constructs which could also be seen as resources. For example, (RezaeiZadeh et al., 2016) describe a taxonomy of competencies which include ideas such as responsiveness, and the Global Entrepreneurship Monitor measures attitudinal variables such as, fear of failure and opportunity perception (Kelley and Singer, 2016).

## **Entrepreneurship Psychology – Conclusions**

Any attempt to analyse entrepreneurship psychology is challenging because of the nascent nature of the discipline and the competing models and constructs which have been proposed to date. Many constructs have been borrowed from mainstream psychology then applied, sometimes inappropriately, to entrepreneurship. Additionally, the classification of constructs sometimes appears to be arbitrary. For instance, Frese and Gielnik (2014) analyse constructs as diverse as extraversion and business planning in the same meta-analysis.

Self-efficacy is a case in point in that it appears in each of the subareas discussed above but with different conceptualisations. It is described variously as a personality trait, a cognitive process, an affect and an attitude.

The domain desperately needs a global longitudinal cohort study to examine the independence of the myriad of variables which have been proposed to date and to tease out the issue of covariance. This creates a dilemma for practice because it is not yet clear at this stage which concepts are most important for entrepreneurial success and which ones are independent of each other.

It would also be useful to determine which traits / affects are most stable and therefore difficult to change; which ones are transient in nature and which ones are both malleable and relatively stable. It is likely that a big five personality characteristic such as extroversion will be relatively stable and that an affect, such as anger will be a passing mood, but fear of failure or confidence could be either and may change over time.

The study of entrepreneurship psychology has provided a great deal of insight into who entrepreneurs are, how they think and how they act, but the effect sizes and study types do not really allow us make firm predictions about who should start what type of business and what the challenges individual entrepreneurs may face. This suggests that entrepreneurs maybe as heterogeneous as the constructs which have been used to describe them which in turn creates problems for generalisation and prediction.

Entrepreneurship psychology has not yet been developed to a point where it can be used to inform practice beyond encouraging nascent and early stage entrepreneurs to reflect on their strengths and weaknesses in general terms. To do this we need to develop a simpler model of how entrepreneurship psychology works: (how the different fields interact); we need to know which constructs are most important to the success of nascent and early stage entrepreneurs; which constructs are open to development and how they can be developed.

Adding further similar constructs and research to the already confusingly overcrowded modelling of entrepreneurship psychology will not really help in achieving those ends. It appears there is a need to develop a different paradigm for entrepreneurship psychology, especially as far as practice is concerned.



## Psychological Capital

Within organisation behaviour studies, the idea of psychological resources has been developed as psychological capital by Luthans (2002), partly derived from the nascent ideas of positive psychology (Seligman and Csikszentmihalyi, 2000).

The current model of psychological capital consists of four resources: Efficacy, Hope, Optimism and Resilience.

We discuss each of these in turn:

*Self-efficacy* within psychological capital draws on the work of Bandura (1977) and is defined by as “the employee’s conviction or confidence about his or her abilities to mobilize the motivations, cognitive resources or courses of action needed to successfully execute a specific task within a given context”. Self-efficacy is envisaged as being domain specific and not generalised. Given the issues the heterogeneity of conceptions of entrepreneurial self-efficacy described above, we intend to use a generalised self-efficacy model, such as Chen et al. (2001)’s because this will ensure that the psychological identity of the construct is not diluted

*Hope* is based on the work of Snyder (1994), (Snyder and Snyder, 2000) and in psychological capital is conceived as “a positive motivational state that is based on an interactively derived sense of agency (goal directed energy) and pathways (planning to meet these goals).” The three ideas within Hope are agency, pathways and goals. As discussed this resonates well with work on the theory of planned behaviour of entrepreneurship.

*Optimism* in psychological capital is based on Seligman and Csikszentmihalyi (2000) and is defined as making internal, stable and global attributions regarding positive events; and making external, unstable and specific attributions for negative events. As discussed optimism has been studied within the cognition subarea of entrepreneurship psychology.

*Resilience* in psychological capital is defined as “the positive psychological capacity to rebound or bounce back from adversity, uncertainty, conflict, failure, or even positive change, progress and increased responsibility” and is built partly on the work of Masten (2001).

Within psychological capital each construct has been shown to have discriminant validity (i.e. they are not just different names for the same construct) and there is a latent or underlying link which runs between them. (Luthans et al., 2007). This is interesting because it gives statistical credibility to the notion of integrated resource theory (Hobfoll, 2002) and may be relevant to our model of entrepreneur psychological resources.

Psychological capital has been studied and found to be useful both theoretically and practically since its conception. In their meta-analysis of 51 studies Avey et al. (2011) showed that psychological capital is correlated with job satisfaction, organizational commitment, psychological well-being, organisation citizenship behaviours, various measures of performance and was negatively related with cynicism, turnover intentions, job stress, anxiety and deviance. They also found that effect sizes were greatest in service businesses and in the United States, and Baron et al. (2013) found that age is also a moderator of the effect of psychological capital. As Newman et al. (2014) pointed out there is still much to investigate in terms of the moderators of psychological capital.

Effect sizes for psychological capital with potentially relevant outcome measures											
Sample	k	N	r	Corr-r	sd	95% Cred I		95% Conf I		Q	BESD Exp
						lower	upper	lower	upper		
Psych well-being	3	1,305	0.40	0.57	0.06			0.51	0.62	17.14*	0.78
Stress / anxiety	4	1,459	-0.20	-0.29	0.20	0.47	-0.10	-0.34	-0.24	28.71**	0.36
Employee performance	24	6,931	0.26	0.26	0.08			0.24	0.29	391.13**	0.63
Self rated performance	6	1,921	0.31	0.33	0.18			0.29	0.37	15.24**	0.67
Objective performance data	6	1,768	0.26	0.27	0.15			0.23	0.32	18.43**	0.27
*p<0.5, **p<.001											

**Table 2. Selected results tables from Avey et al. (2011) meta-analysis.**

## **Entrepreneurial Psychological Capital – What is it?**

To date there has been only a limited conceptualisation and investigation into the notion of EPC within the entrepreneurship field.

In the organisation-employee modelling of psychological capital, Luthans et al. (2007) describe a continuum from positive states, which include momentary and passing moods and feelings (e.g. pleasure and happiness), to positive traits which are fixed, stable and very difficult to change (e.g. intelligence and, big five personality dimensions). Entrepreneurial psychological capital constructs are conceptualised as being “state-like”, that is relatively malleable and open to development but much more stable than affective reactions.

Attempts have been made to apply employee psychological capital models to entrepreneurs (Jensen and Luthans, 2006, Hmieleski and Carr, 2008b, Baron et al., 2013, Ming and Zuguang, 2013) and whilst this is interesting there is scope to derive EPC from entrepreneurship theory rather than applying it blindly from the organisation domain to entrepreneurship. As far as we are aware no attempt has been made to redefine psychological capital for the entrepreneurship domain. The studies have looked into whether the organisation-employee measure of psychological capital can predict outcomes for entrepreneurs, which given their positive results is a useful starting point, which has helped to inform our choice of constructs but there is a need to develop and define psychological capital for the entrepreneurship domain

To date there have only been three studies looking at the psychological capital of entrepreneurs but they have a number of limitations (Jensen and Luthans, 2006, Hmieleski and Carr, 2008b, Baron et al., 2013). They are all limited by the fact that they are US based and focus on established entrepreneurs and do not include nascent and potential entrepreneurs. They are also cross sectional so do not measure whether the psychological capital of those studied is open to change. Some of the measures used for constructs such as human capital are not theoretically justified and in two of the studies the outcome variables (authentic leadership and wellbeing) are unusual in the entrepreneurship literature. Some of the items on the psychological capital inventory are not suitable for entrepreneurs. For instance, one item asks how confident the participant feels representing their department in meetings. This is symptomatic of perhaps the most important general limitation which is the absence of theory building based on the entrepreneurship literature across all three studies.

Jensen and Luthans (2006) investigated an early conception of EPC from the perspective of authentic leadership. The study was done before Luthans et al. (2007) had fully developed the framework and the measure of psychological capital did not include efficacy, nor does the work include any theoretical development of how EPC might be different to organisation-employee psychological capital.

Hmieleski and Carr (2008a) found that the organisation-employee model of psychological capital explained new venture performance above and beyond measures of financial capital, human capital, and social capital, but the study has a number of flaws. Although it measures different “capitals” (human, social and financial) it not does consider psychological capital from that perspective or develop it theoretically and the measures used for human capital (“the number of new ventures started prior to the founding of their current business”) is much narrower than their theoretical description of human capital suggests.

Baron et al. (2013) studied the relationship between PsyCap and wellbeing and found that entrepreneurs with higher psychological capital had higher wellbeing. A concern here is that PsyCap and subjective wellbeing might both be manifestations of the same construct. The most interesting contributions which this study makes are the age moderator findings described above and the use of subjective wellbeing as an entrepreneurial outcomes model.

These last two studies, which share an author, use a similar method of sampling and for data collection which is essentially cross sectional. All three studies are US based.

## **THE RESOURCE METAPHOR**

To address the challenge of operationalising entrepreneurship psychology we intend to use a resource based model. This approach transcends the understandable lack of coherence within entrepreneurship psychology

as already outlined and has proved successful in several different fields. As (Hobfoll, 2002) notes “Resources are those entities that either are centrally valued in their own right (e.g., self-esteem, close attachments, health, and inner peace) or act as a means to obtain centrally valued ends (e.g., money, social support, and credit)” The resources metaphor has been used successfully in general management theory in the resource based view of the firm which describes the need to acquire limited resources to gain competitive advantage (Penrose, 1959) and within entrepreneurship the resource metaphor has been used to describe the resources needed to create and run an enterprise. Resources in this context include financial capital, physical capital, natural capital, human capital, social capital, technological capital, intellectual capital, and even political capital, (Bridge and O'Neill, 2012) and the metaphor has been used in describing entrepreneurial organisations including other resources such as status and prestige (Guerrero et al., 2014). It has not been used to describe the individual psychological resources of entrepreneurs. For the purposes of this study our focus lies in the resources of the individual entrepreneur.

Individual psychological resources are sometimes described as being proximal or distal to the self or internal or external (Hobfoll, 2002). Multiple resource conceptualisations have been developed in mainstream psychology including individual resource theories derived from Bandura (1977)'s seminal work on self-efficacy, related to specific challenges, which has been broadened into a model of generalised self-efficacy. As discussed, one of the more confusing aspects of the entrepreneurship psychology literature is that self-efficacy is proposed as a construct across the four subareas of personality, cognition, affect and attitudes. This is partly explained by the fact that researchers use task specific and generalised self-efficacy; and dispositional (or trait) and affective self-efficacy interchangeably.

Another individual psychological resource is dispositional optimism (Scheier and Carver, 1985, Brissette et al., 2002) which is also described in the entrepreneurship literature within the cognitive subarea (Wilson et al., 2007) which is partly derived from attribution theory: how individuals explain events. This has resonance with the locus of control literature in entrepreneurship.

Goal pursuit (Seligman, 1975, Brandtstädter and Greve, 1994) has been examined as a possible personal resource and was derived from Seligman's seminal work on learned helplessness. It resonates with the attitude subarea of entrepreneurship psychology, especially the theory of planned behaviour. More recently, resilience, the capacity to recover from setbacks has been proposed as a resource (Masten, 2001, Masten, 2002).

Whilst these individual resources have been developed theoretically and tested empirically it is unclear if they are independent of each other. We will come back to this when we discuss the possibility of a latent variable underlying EPC. Because of this interrelation of individual psychological resources various multiple-component resources theories have been advanced (Hobfoll, 2002) including the idea of personality hardiness put forward by Kobasa (1979).

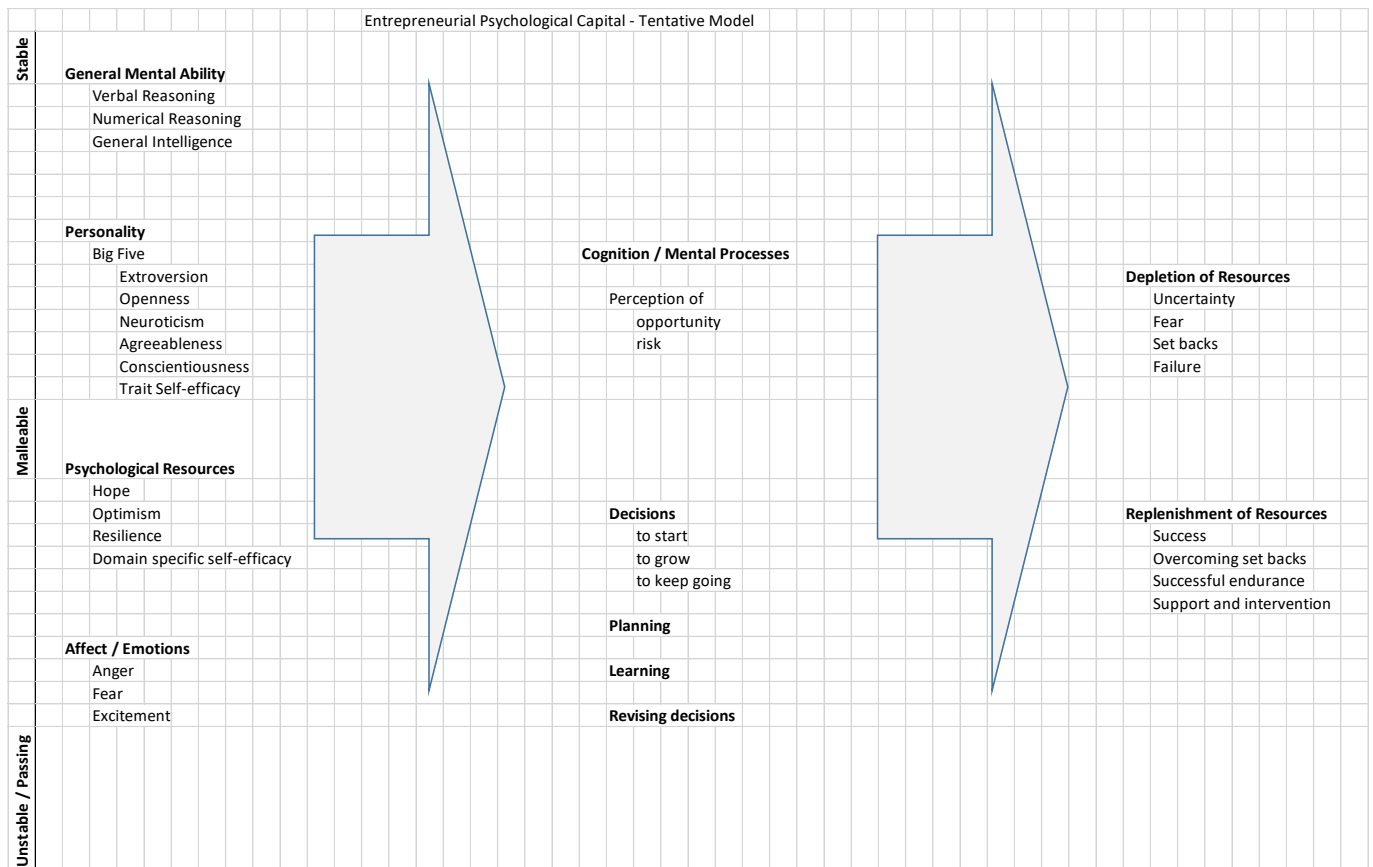
Integrated resource models have also been proposed and from these have been derived conservation of resources theory which suggest that individuals will try to obtain, retain and protect resources in high stress situations. This could be particularly useful in thinking about how entrepreneurs need to marshal their resources during the inherently stressful startup process.

Within the study of stress at work, the job demands resource theory has been used as way of explaining, predicting and avoiding burnout and in managing stress (Bakker et al., 2005, Bakker et al., 2004, Demerouti et al., 2001) but as far as we are aware this approach has not been used in studying or developing entrepreneurs. The resource based model which has gained the most traction in work settings has been psychological capital (Luthans et al., 2007) described above.

## DEVELOPMENT OF THE MODEL

Our working definition of entrepreneurial psychological capital is, “the psychological resources which entrepreneurs need to be pursue and sustain their entrepreneurial ambition.”, and unlike the predominant trait and cognitive models in the entrepreneurship psychology literature, it focusses, specifically, on those state-like characteristics which change over time.

Our suggested model is set out below.



**Figure 2. Proposed model entrepreneurial psychological resources.**

The research study is in its early stages. The key decisions which are being made are around which constructs to include in our model and how to test their validity. The most rigorous way to do this is to develop a measure of EPC and test its psychometric properties. We are following the methodology set out by Rust and Golombok (2009).

### Face Validity

To decide which constructs to include within the model we have reviewed the literature and conducted semi-structured individual and group discussions with entrepreneurship educators, nascent, early stage and experienced entrepreneurs to determine what would be most relevant both theoretically and practically.

Based on this we have decided to use the same four constructs as psychological capital as our main resources for investigation. This is because the four constructs draw on theory developed across the four subareas of entrepreneurship psychology described above, and have already been shown to have strong reliability and validity with employees (although these properties will need to be tested independently in the entrepreneurship

domain). It will also be interesting to uncover if there is an underlying or latent variable in entrepreneurial psychological capital similar to the organisation-employee model. Nascent and early stage entrepreneurs thought these would be most useful and interesting things to know about themselves.

Additionally, we will include and measure openness to experience from the big five personality dimensions because one expert suggested that this may determine the degree to which individual entrepreneurs' resources may be open to development and locus of control because it is seen as important in planned behaviour theory and is not fully covered by the attribution theory elements of optimism.

Several other ideas have emerged from this.

First is a challenge to the notion that all successful entrepreneurs will have common characteristics and equal resource and developmental needs. Some entrepreneurs seem to know instinctively what to do and how to do it and seem to have the proposed psychological resources such as self-efficacy prior to starting out. Others feel the journey is more of a psychological roller coaster and feel that they need more development and support with respect to these resources. One group on an accelerator programme reported feeling like impostors or people just playing a starting a business: it did not feel real until some launching off point.

Second was a challenge to what success means in entrepreneurship. The literature measures success mainly in economic terms (venture creation, turnover, growth, employment) whereas success for the people interviewed is subtler than this. This is of critical importance because the criterion validity of our measure will be determined against a success measure. This has led to a further review of the literature and the decision to use the broader success scale developed by Wach et al. (2015) which measures entrepreneurial success in terms of personal fulfilment, firm performance, personal financial rewards, community impact and workplace relationships.

Third was the idea linked to the first that some entrepreneurs are more open to advice and general development than others. Some "know it all, already" and do not engage with training programmes. This has led to an exploration of the work on fixed and growth mindsets (Dweck, 2006) and the possible inclusion of measures to see if this is a moderating variable.

At this stage we have decided to leave out the construct of creativity. It is being considered by Luthans et al. (2015) for inclusion as a development of the model of organisation-employee psychological capital but although there is a body of work looking at creativity it is under theorised as a psychological construct in the entrepreneurship literature.

## **Content Validity**

Following the procedure suggested by Rust and Golombok (2009) our next step is develop a long list of items. Our starting point was the psychometric measure used by Luthans et al. (2007) to validate the organisation-employee version of psychological capital. However, several of the items would not make sense for entrepreneurs. Luthans et al. (2007) decided which items to include and exclude from the scales which they derived their measure from, which is less labour intensive than testing the psychometric properties of a long list of items but tends to create tools which have less power. They did test the reliability and validity of their scale but using a longer list of items may have yielded more powerful results. We therefore moved on to the scales which they derived their scales from.

The resilience scale used by Wagnild (1993) is generalised and consists of twenty five items all of which will be included in next stage of our face validity study. The hope scale developed by (Snyder et al., 1996) consists of twelve items is generalised and all will also be included. The optimism scale developed by Scheier and Carver (1985) also consists of twelve items and is also generalised. The self-efficacy scale developed by Parker (1998) is problematic because it is domain specific in line with original theory developed by Bandura (1977) bandura and several of the items would not make sense in an entrepreneurship setting. We have therefore substituted the generalised self-efficacy measure developed by Chen et al. (2001) which consists of 8 items.

The next stage will be to conduct a content validity study using a panel of experts to review the long list of items. Sampling strategies and participant recruitment are currently being planned.

## **Contribution and Conclusions**

In spite of a considerable body of work, significant gaps exist in the entrepreneurship psychology literature. The large number of cross-sectional studies has led to a proliferation of constructs which need to be tested against each other for independence. Partly because of this there have been relatively few transfers of entrepreneurship psychology research to practice. Resource models such as social and human capital have been applied to entrepreneurship but as far as we are aware, whilst the individual resource model of psychological capital has been explored in the organisation context it has not been adequately developed and tested in entrepreneurship.

Our paper seeks to make two contributions. The first is advancing our understanding beyond the psychological characteristics of entrepreneurs to identifying the EPC and psychological resources required at the nascent and early stages of entrepreneurship. The psychological tradition in entrepreneurship seems to focus on the description of entrepreneurship as a phenomenon rather than as a way to foster entrepreneurship. Frese et al. (2012) suggest that entrepreneurship psychology could help policy makers and investors to choose which entrepreneurs to back; and help entrepreneurs compensate for weaknesses by recruiting team members to plug gaps but attempts to do this have not been successful.

Second, through the identification of EPC and psychological resources it can provide a set of issues that can contribute to improve existing entrepreneurship education initiatives and design interventions that enhance the psychological resource awareness of entrepreneurs that can to positive outcomes. By determining which psychological constructs are open to development and predict positive outcomes this research project will provide evidence which entrepreneurship educators can use to inform their practice, and perhaps more importantly provide entrepreneurs with information which will allow them to make better decisions.

## REFERENCES

- ÁCS, Z. J. & AUDRETSCH, D. B. 2006. *Handbook of entrepreneurship research: An interdisciplinary survey and introduction*, Springer Science & Business Media.
- AHMETOGLU, G., LEUTNER, F. & CHAMORRO-PREMUZIC, T. 2011. EQ-nomics: Understanding the relationship between individual differences in Trait Emotional Intelligence and entrepreneurship. *Personality and Individual Differences*, 51, 1028-1033.
- AJZEN, I. 1991. The theory of planned behavior. *Organizational behavior and human decision processes*, 50, 179-211.
- AJZEN, I. & FISHBEIN, M. 1980. Understanding attitudes and predicting social behaviour.
- AVEY, REICHARD, R. J., LUTHANS, F. & MHATRE, K. H. 2011. Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors, and performance. *Human Resource Development Quarterly*, 22, 127-152.
- BAE, T. J., QIAN, S., MIAO, C. & FIET, J. O. 2014. The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, 38, 217-254.
- BAKKER, A. B., DEMEROUTI, E. & EUWEMA, M. C. 2005. Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology; Journal of Occupational Health Psychology*, 10, 170.
- BAKKER, A. B., DEMEROUTI, E. & VERBEKE, W. 2004. Using the job demands-resources model to predict burnout and performance. *Human Resource Management*, 43, 83-104.
- BANDURA, A. 1977. Self-Efficacy - toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84, 191-215.
- BARON, R. A. 1998. Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business venturing*, 13, 275-294.
- BARON, R. A. 2008. The role of affect in the entrepreneurial process. *Academy of management Review*, 33, 328-340.
- BARON, R. A., FRANKLIN, R. J. & HMIELESKI, K. M. 2013. Why Entrepreneurs Often Experience Low, Not High, Levels of Stress The Joint Effects of Selection and Psychological Capital. *Journal of Management*, 0149206313495411.
- BORLAND, C. M. 1975. *Locus of control, need for achievement and entrepreneurship*. ProQuest Information & Learning.
- BRANDTSTÄDTER, J. & GREVE, W. 1994. The aging self: Stabilizing and protective processes. *Developmental review*, 14, 52-80.
- BRIDGE, S. & O'NEILL, K. 2012. *Understanding enterprise: entrepreneurship and small business*, Palgrave Macmillan.
- BRINER, R. B., DENYER, D. & ROUSSEAU, D. M. 2009. Evidence-based management: concept cleanup time? *The Academy of Management Perspectives ARCHIVE*, 23, 19-32.
- BRISSETTE, I., SCHEIER, M. F. & CARVER, C. S. 2002. The role of optimism in social network development, coping, and psychological adjustment during a life transition. *Journal of personality and social psychology*, 82, 102.
- BURNS, P. 2010. *Entrepreneurship and small business*, Palgrave Macmillan.
- CARDON, M. S., FOO, M. D., SHEPHERD, D. & WIKLUND, J. 2012. Exploring the heart: entrepreneurial emotion is a hot topic. *Entrepreneurship Theory and Practice*, 36, 1-10.
- CASSAR, G. & CRAIG, J. 2009. An investigation of hindsight bias in nascent venture activity. *Journal of Business Venturing*, 24, 149-164.
- CHEN, G., GULLY, S. M. & EDEN, D. 2001. Validation of a new general self-efficacy scale. *Organizational research methods*, 4, 62-83.
- DAVIDSSON, P. & GORDON, S. R. 2009. Nascent entrepreneur (ship) research: A review.
- DE VRIES, M. 1977. The entrepreneurial personality: A person at the crossroads. *Journal of management studies*, 14, 34-57.
- DEMEROUTI, E., BAKKER, A. B., NACHREINER, F. & SCHAUFELI, W. B. 2001. The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499.

- DWECK, C. 2006. *Mindset: The new psychology of success*, Random House.
- ENGLE, R. L., DIMITRIADI, N., GAVIDIA, J. V., SCHLAEGEL, C., DELANOE, S., ALVARADO, I., HE, X., BUAME, S. & WOLFF, B. 2010. Entrepreneurial intent: A twelve-country evaluation of Ajzen's model of planned behavior. *International Journal of Entrepreneurial Behavior & Research*, 16, 35-57.
- FAYOLLE, A. 2013. Personal views on the future of entrepreneurship education. *Entrepreneurship & Regional Development*, 25, 692-701.
- FRANCESCO SCHIAVONE, D., MARCO ROMANO, P., G. GATELY, C. & A. CUNNINGHAM, J. 2014. Building intellectual capital in incubated technology firms. *Journal of Intellectual Capital*, 15, 516-536.
- FRESE, M. 2009. *Toward a psychology of entrepreneurship: An action theory perspective*, Now Publishers Inc.
- FRESE, M., BAUSCH, A., SCHMIDT, P., STRAUCH, A. & KABST, R. 2012. Evidence-based entrepreneurship: Cumulative science, action principles, and bridging the gap between science and practice. *Foundations and Trends in Entrepreneurship*, 8.
- FRESE, M. & GIELNIK, M. M. 2014. The Psychology of Entrepreneurship. *Annual Review of Organizational Psychology and Organizational Behavior*, Vol 1, 1, 413-438.
- FRESE, M., HASS, L. & FRIEDRICH, C. 2016. Personal initiative training for small business owners. *Journal of Business Venturing Insights*, 5, 27-36.
- GATELY, C. & CUNNINGHAM, J. 2014. The Contributions and Disconnections Between Writing a Business Plan and The Start-up Process for Incubator Technology Entrepreneurs. *Academic Entrepreneurship: Creating An Entrepreneurial Ecosystem (Advances in Entrepreneurship, Firm Emergence and Growth, Volume 16)* Emerald Group Publishing Limited, 16, 197-241.
- GIELNIK, M. M., FRESE, M., KAHARA-KAWUKI, A., KATONO, I. W., KYEJJUSA, S., NGOMA, M., MUNENE, J., NAMATOVU-DAWA, R., NANSUBUGA, F. & OROBIA, L. 2015. Action and action-regulation in entrepreneurship: Evaluating a student training for promoting entrepreneurship. *Academy of Management Learning & Education*, 14, 69-94.
- GORGIEVSKI, M. J. & STEPHAN, U. 2016. Advancing the Psychology of Entrepreneurship: A Review of the Psychological Literature and an Introduction. *Applied Psychology*, 65, 437-468.
- GUERRERO, M., URBANO, D., CUNNINGHAM, J. & ORGAN, D. 2014. Entrepreneurial universities in two European regions: A case study comparison. *The journal of technology Transfer*, 39, 415-434.
- HALTIWANGER, J., JARMIN, R. S. & MIRANDA, J. 2013. Who creates jobs? Small versus large versus young. *Review of Economics and Statistics*, 95, 347-361.
- HAYNIE, J. M., SHEPHERD, D., MOSAKOWSKI, E. & EARLEY, P. C. 2010. A situated metacognitive model of the entrepreneurial mindset. *Journal of business venturing*, 25, 217-229.
- HAYWARD, M. L., FORSTER, W. R., SARASVATHY, S. D. & FREDRICKSON, B. L. 2010. Beyond hubris: How highly confident entrepreneurs rebound to venture again. *Journal of Business Venturing*, 25, 569-578.
- HMIELESKI, K. M. & CARR, J. C. 2008a. The relationship between entrepreneur psychological capital and new venture performance.
- HMIELESKI, K. M. & CARR, J. C. 2008b. The relationship between entrepreneur psychological capital and new venture performance. *Frontiers of Entrepreneurship Research*.
- HOBFOLL, S. E. 2002. Social and psychological resources and adaptation. *Review of general psychology*, 6, 307.
- JENSEN, S. M. & LUTHANS, F. 2006. Relationship between entrepreneurs' psychological capital and their authentic leadership. *Journal of Managerial Issues*, 254-273.
- JOENSUU-SALO, S., VARAMÄKI, E. & VILJAMAA, A. 2015. Beyond intentions—what makes a student start a firm? *Education+ Training*, 57, 853-873.
- JOHNSON, K. L., DANIS, W. M. & DOLLINGER, M. J. 2008. Are you an innovator or adaptor? The impact of cognitive propensity on venture expectations and outcomes. *New England Journal of Entrepreneurship*, 11, 5.
- KELLEY, D. & SINGER, S. 2016. Global Entrepreneurship Monitor 2011 Report.
- KOBASA, S. C. 1979. Stressful life events, personality, and health: an inquiry into hardiness. *Journal of personality and social psychology*, 37, 1.
- LUTHANS 2002. Positive organizational behavior: Developing and managing psychological strengths. *Academy of Management Executive*, 16, 57-72.



- LUTHANS, AVOLIO, AVEY & NORMAN 2007. Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology*, 60, 541-572.
- LUTHANS, F., YOUSSEF-MORGAN, C. M. & AVOLIO, B. J. 2015. *Psychological capital and beyond*, Oxford University Press.
- MARMER, M., HERRMANN, B. L., DOGRULTAN, E., BERMAN, R., EESLEY, C. & BLANK, S. 2011. Startup genome report extra: Premature scaling. *Startup Genome*, 10.
- MARTIN, B. C., MCNALLY, J. J. & KAY, M. J. 2013. Examining the formation of human capital in entrepreneurship: a meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28, 211-224.
- MASTEN, A. S. 2001. Ordinary magic: Resilience processes in development. *American psychologist*, 56, 227.
- MASTEN, A. S. 2002. Resilience comes of age. *Resilience and Development*. Springer.
- MING, Z. & ZUGUANG, H. The entrepreneurial psychological capital and the study of entrepreneurship. Information Management, Innovation Management and Industrial Engineering (ICIII), 2013 6th International Conference on, 2013. IEEE, 135-137.
- NABI, G., LIÑÁN, F., KRUEGER, N., FAYOLLE, A. & WALMSLEY, A. 2016. The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning & Education*, amle. 2015.0026.
- NEWMAN, A., UCBASARAN, D., ZHU, F. & HIRST, G. 2014. Psychological capital: A review and synthesis. *Journal of Organizational Behavior*, 35, S120-S138.
- OMOREDE, A., THORGREN, S. & WINCENT, J. 2015. Entrepreneurship psychology: a review. *International Entrepreneurship and Management Journal*, 11, 743-768.
- PARKER, S. K. 1998. Enhancing role breadth self-efficacy: the roles of job enrichment and other organizational interventions. *Journal of Applied Psychology*, 83, 835.
- PENROSE, E. T. 1959. The Theory of the Growth of the Firm. *Great Britain: Basil Blackwell and Mott Ltd*.
- PRADHAN, R. K. & NATH, P. 2012. Perception of entrepreneurial orientation and emotional intelligence a study on India's future techno-managers. *Global Business Review*, 13, 89-108.
- RAUCH, A. & FRESE, M. 2007. Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16, 353-385.
- REZAEIZADEH, M., HOGAN, M., O'REILLY, J., CUNNINGHAM, J. & MURPHY, E. 2016. Core entrepreneurial competencies and their interdependencies: insights from a study of Irish and Iranian entrepreneurs, university students and academics. *International Entrepreneurship and Management Journal*.
- RIDEOUT, E. C. & GRAY, D. O. 2013. Does entrepreneurship education really work? A review and methodological critique of the empirical literature on the effects of university-based entrepreneurship education. *Journal of Small Business Management*, 51, 329-351.
- ROUSSEAU, D. M. 2006. Is there such a thing as "evidence-based management"? *The Academy of Management Review ARCHIVE*, 31, 256-269.
- RUST, J. & GOLOMBOK, S. 2009. *Modern psychometrics : the science of psychological assessment*, Hove, East Sussex ; New York, Routledge.
- SACKETT, D. L., ROSENBERG, W. M., GRAY, J., HAYNES, R. B. & RICHARDSON, W. S. 1996. Evidence based medicine: what it is and what it isn't. *BMJ: British Medical Journal*, 312, 71.
- SARASVATHY, S. D. 2009. *Effectuation: Elements of entrepreneurial expertise*, Edward Elgar Publishing.
- SCHEIER, M. F. & CARVER, C. S. 1985. Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health psychology*, 4, 219.
- SCHENKEL, M. T., MATTHEWS, C. H. & FORD, M. W. 2009. Making rational use of 'irrationality'? Exploring the role of need for cognitive closure in nascent entrepreneurial activity. *Entrepreneurship and Regional Development*, 21, 51-76.
- SCHUMPETER, J. A. 1947. The creative response in economic history. *The journal of economic history*, 7, 149-159.
- SCOLLON, C. N. & DIENER, E. 2006. Love, work, and changes in extraversion and neuroticism over time. *Journal of personality and social psychology*, 91, 1152.

- SELIGMAN, M. & CSIKSZENTMIHALYI, M. 2000. Positive psychology: An introduction. *American Psychologist*; *American Psychologist*, 55, 5.
- SELIGMAN, M. E. 1975. *Helplessness: On depression, development, and death*, WH Freeman/Times Books/Henry Holt & Co.
- SHANE, S. A. 2003. *A general theory of entrepreneurship: The individual-opportunity nexus*, Edward Elgar Publishing.
- SIMON, M., HOUGHTON, S. M. & AQUINO, K. 2000. Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of business venturing*, 15, 113-134.
- SNYDER, C. R. 1994. *The psychology of hope : you can get there from here*, New York, Free Press.
- SNYDER, C. R., LOPEZ, S. J. & PEDROTTI, J. T. 2015. *Positive psychology : the scientific and practical explorations of human strengths*, Los Angeles, SAGE.
- SNYDER, C. R. & SNYDER, C. R. 2000. *Handbook of hope : theory, measures & applications*, San Diego, Calif., Academic Press.
- SNYDER, C. R., SYMPSON, S. C., YBASCO, F. C., BORDERS, T. F., BABYAK, M. A. & HIGGINS, R. L. 1996. Development and validation of the State Hope Scale. *Journal of Personality and Social Psychology*, 70, 321-335.
- THRANE, C., BLENKER, P., KORSGAARD, S. & NEERGAARD, H. 2016. The promise of entrepreneurship education: Reconceptualizing the individual-opportunity nexus as a conceptual framework for entrepreneurship education. *International Small Business Journal*.
- WACH, D., STEPHAN, U. & GORGIEVSKI, M. 2015. More than money: Developing an integrative multi-factorial measure of entrepreneurial success. *International Small Business Journal*, 0266242615608469.
- WAGNILD, G. M. 1993. Development and Psychometric. *Journal of nursing measurement*, 1.
- WILSON, F., KICKUL, J. & MARLINO, D. 2007. Gender, entrepreneurial Self-Efficacy, and entrepreneurial career intentions: Implications for entrepreneurship Education1. *Entrepreneurship theory and practice*, 31, 387-406.
- XU, H. & RUEF, M. 2004. The myth of the risk-tolerant entrepreneur. *Strategic Organization*, 2, 331-355.
- ZAMPETAKIS, L. A., BELDEKOS, P. & MOUSTAKIS, V. S. 2009. "Day-to-day" entrepreneurship within organisations: The role of trait Emotional Intelligence and Perceived Organisational Support. *European Management Journal*, 27, 165-175.
- ZHAO, H. & SEIBERT, S. E. 2006. The big five personality dimensions and entrepreneurial status: A meta-analytical review. *Journal of Applied Psychology*, 91, 259-271.
- ZHAO, H., SEIBERT, S. E. & LUMPKIN, G. T. 2010. The Relationship of Personality to Entrepreneurial Intentions and Performance: A Meta-Analytic Review. *Journal of Management*, 36, 381-404.

## WEB REFERENCES

The Quality Assurance Agency for Higher Education 2012, Enterprise and entrepreneurship education: Guidance for UK higher education providers, accessed 31 July 2016

<<http://www.qaa.ac.uk/en/Publications/Documents/enterprise-entrepreneurship-guidance.pdf>>.

General Enterprising Tendency v2 Test GET2, 2016, Testing enterprising potential, accessed 31 July 2016  
[www.get2test.net](http://www.get2test.net).

Saville Consulting Wave Entrepreneurial Report, 2016, accessed 31 July 2016

<<https://www.savilleconsulting.com/entrepreneurial-report>>